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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,695	02/20/2004	Susumu Sasaki	501-43506X00	3683
20457	7590	09/19/2006	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			WON, BUMSUK	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/781,695	SASAKI ET AL.	
	Examiner	Art Unit	
	Bumsuk Won	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 and 6-8 is/are allowed.
- 6) ☒ Claim(s) 4, 5, 9-11, 13-15, 17, 18 is/are rejected.
- 7) ☒ Claim(s) 12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>08/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on 7/26/2006 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 4 and 5 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claims 4, 5, and 9-14 are objected to because of the following informalities:

Claim 4 has a claim limitation "the occupancy rate of a conductor is high" in the line third from the last line. The claim limitation "the occupancy rate of a conductor is high" is indefinite since one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For examining purpose, it will be assumed as any conductor. Appropriate correction is required. Claims 5 and 9-14 are objected to due to claim dependency.

Claims 13 and 14 have same claim limitation and claim 13 is dependent on claim 14. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, 9-11, 13-15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeng (5,772,485) in view of Uemura (6,239,547) which is in the Applicant's IDS.

Regarding claim 4, Jeng discloses a display device (figure 1) comprising: a face substrate (26) which forms anodes (28) and phosphors (24) on an inner surface thereof; a plurality of cathode lines (16) which extend in one direction and are arranged in parallel in another direction which crosses one direction; a plurality of electron sources (14) which are arranged on the cathode lines in an electrically conductive manner (column 4, lines 47-52); control electrodes (22) which face the cathode lines in a display region (not referenced) and have electron passing apertures (34) for allowing electrons from the electron sources to pass through the electron passing apertures to the face substrate side (column 4, lines 52-56); a back substrate (18) which forms the control electrodes and the cathode lines on an inner surface thereof and faces the face substrate in an opposed manner with a given distance therebetween (figure 1); a support body (36) which is interposed between the face substrate and the back substrate in a state that the support body surrounds the display region and holds the given distance (figure 1); and a sealing material (column 4, lines 44-46) which hermetically seals end faces of the support body and the face substrate and the back substrate respectively.

Jeng does not disclose a layer having a conductor is interposed in a connecting portion between the cathode line and the electron source.

Uemura discloses a display device (figs 10A, 10B, 10C) having a conductive layer (fig 9B, 905) being interposed in a connecting portion between the cathode line (904) and the

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electron source (903), for the purpose of having higher conductivity and adherence between the electron source and the cathode.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a conductive layer being interposed in a connecting portion between the cathode line and the electron source disclosed by Uemura in the display device disclosed by Jeng, for the purpose of having higher conductivity and adherence between the electron source and the cathode.

Regarding claim 5, Uemura discloses the layer is a silver particle layer (col 5, lines 33-49). The reason for combining is the same as for claim 4 above.

Regarding claim 9, Uemura discloses the layer (905) is a member which separates from the cathode line (904) and the electron source (903). The reason for combining is the same as for claim 4 above.

Regarding claim 10, Uemura discloses the layer (905) which separating from the cathode line and the electron source has a composition different from the composition of the cathode line (the layer is made of conductive adhesive such as silver paste while the cathode line are made of a metal).

Regarding claim 11, Uemura discloses the layer (905) which separating from the cathode line and the electron source has different occupancy rate of conductors from the occupancy rate of conductors of the cathode line (the layer is made of conductive adhesive such as silver paste while the cathode line are made of a metal).

Regarding claims 13 and 14, the examiner notes that the claim limitation of the layer interposed in the connecting portion enabling electron emission to be produced from

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substantially the whole surface of the electron source with and uniform emission quality to be obtained for a long time is drawn to a functional claim limitation which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a functional claim limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject functional claim limitation is not afforded patentable weight (MPEP 2114).

Regarding claim 15, Jeng discloses a display device (figure 1) comprising: a face substrate (26) which forms anodes (28) and phosphors (24) on an inner surface thereof; a plurality of cathode lines (16, 17) which extend in one direction and are arranged in parallel in another direction which crosses one direction, the cathode lines including a conductor (16) and an insulator (17) with the conductor having a first occupancy rate with respect to an occupancy rate of the insulator; a plurality of electron sources (14) which are electrically connected with the cathode lines (column 4, lines 47-52); a back substrate (18) having the electron sources (14) and the cathode lines formed on an inner surface thereof and which faces the face substrate in an opposed manner with a given distance between; a support body (36) which is interposed between the face substrate and the back substrate in a state such that the support body surrounds a display region and holds said given distance (fig 1); a sealing material (col 4, lines 44-46) which hermetically seals end faces of the support body and the face substrate, and the back substrate respectively.

Jeng does not disclose a connecting portion of the cathode line with the electron source, wherein the connecting portion has a conductor with a second occupancy rate which is different from the first occupancy rate of the conductor of the cathode line.

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Uemura discloses a display device (figs 10A, 10B, 10C) having a conductive layer (fig 9B, 905) being interposed in a connecting portion between the cathode line (904) and the electron source (903), and the layer (905) has different occupancy rate of conductors from the occupancy rate of conductors of the cathode line (the layer is made of conductive adhesive such as silver paste while the cathode line are made of a metal), for the purpose of having higher conductivity and adherence between the electron source and the cathode.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a conductive layer being interposed in a connecting portion between the cathode line and the electron source and the layer has different occupancy rate of conductors from the occupancy rate of conductors of the cathode line disclosed by Uemura in the display device disclosed by Jeng, for the purpose of having higher conductivity and adherence between the electron source.

Regarding claim 17, Uemura discloses the layer (905) is a member which separates from the cathode line (904) and the electron source (903). The reason for combining is the same as for claim 4 above.

Regarding claim 18, Uemura discloses the layer (905) which separating from the cathode line and the electron source has different occupancy rate of conductors from the occupancy rate of conductors of the cathode line (the layer is made of conductive adhesive such as silver paste while the cathode line are made of a metal).

Allowable Subject Matter

Claims 1-3 and 6-8 are allowed. The following is an examiner's statement of reasons for allowance:

Regarding the independent claim 1, the prior art of record does not teach or suggest the invention of a display device having a connecting portion of the cathode line with the electron source being a composition which includes a conductor and an insulator wherein the occupancy rate of the conductor is equal or more than the occupancy rate of the insulator, along with other claimed limitations. Claims 2, 3, and 6-8 are allowed due to claim dependency.

Claims 12 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding the claim 12, the prior art of record does not teach or suggest the invention of a display device having the occupancy rate of the conductor of the layer interposed in the connecting portion of the cathode line with the electron source being higher than the occupancy rate of the conductor of the cathode line, along with other claimed limitations.

Regarding claim 16, the prior art of record does not teach or suggest the invention of a display device having the second occupancy rate of the conductor of the layer interposed in the connecting portion of the cathode line with the electron source being higher than the first occupancy rate of the conductor of the cathode line, along with other claimed limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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Contact information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Bumsuk Won
Patent Examiner



JOSEPH WILLIAMS
PRIMARY EXAMINER